



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,067	06/08/2006	Michael Jonathan Lain	LAIN-3443	7463
25628	7590	08/25/2008	EXAMINER	
LAW OFFICES OF WILLIAM H. HOLT			RADEMAKER, CLAIRE L	
12311 HARBOR DRIVE				
WOODBRIDGE, VA 22192			ART UNIT	PAPER NUMBER
			1795	
			MAIL DATE	DELIVERY MODE
			08/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,067	LAIN ET AL.	
	Examiner	Art Unit	
	CLAIRE L. RADEMAKER	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 6/8/06, 1/22/08, 3/17/08, 4/14/08.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-22 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 13 February 2006 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>See Continuation Sheet</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/8/06, 1/22/08, 3/17/08, 4/14/08.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) filed June 8, 2006 and April 14, 2008 fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed.

Specifically, copies of the following references have not been received: JP 01-059779, GB 2-290-537, & GB 2-319-024 from the June 8, 2006 IDS, and JP 11-025-975, JP 2000-164-210, JP 63-013282, JP 10-270086, JP 2000-67853, JP 04-126374, JP 10-223259, JP 04-039859, & JP 05-234621. These references have been placed in the application file and the information referred to therein has been considered.

Additionally, a copy of the following reference has not been received: "Word Net Search" (<http://wordnet.princeton.edu>). This reference has been lined out and the information referred to therein has not been considered.

2. The information disclosure statements filed April 14, 2008 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. Specifically, no explanation of relevance has been received for DE 689-10-843. However, this reference has been placed in the application file and the information referred to therein has been considered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 7, and 12 are considered indefinite because it is unclear what specifically “stabilised lithium metal” is or how/why it is stabilized. For examination purposes, the lithium metal is considered stabilized if it has undergone a similar preparation method as that which is described in the Specification (page 3, line 30 – page 4, line 1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-2, 5-6, 12, 18-19 & 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (WO 99/43034) in view of Yoon (WO 02/21632).

With regard to claims 1-2, 5-6, 12, 18-19, & 22, Chu et al. teaches a process for producing one or more anodes for a battery (page 1, lines 10-13), wherein the process for producing said anodes comprises: forming an anode precursor (page 3, lines 3-17) comprising a layer of intercalation material (page 3, lines 32-35 & page 4, lines 4-6) and then applying lithium metal particles to the surface of said anode precursor (page 3, line 8 & page 4, lines 7-8) by means of electrostatic transfer (page 6, lines 4-5), but fails to teach the specified type of lithium metal particles or the concept of fixing the lithium metal particles to the surface of the anode precursor by rolling.

Yoon teaches the concept of using stabilized lithium metal particles in an electrode (page 5, lines 1-16 & page 8, line 19 - page 9, line 4), and the concept of applying said stabilized lithium particles to the anode surface by rolling (page 5, lines 19-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of using stabilized lithium metal particles of Yoon to the anode of Chu et al. in order to suppress the formation and growth of a dendrite of lithium metal on the surface of said anode (abstract). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of fixing the lithium metal particles to the electrode surface by rolling of Yoon to the anode of Chu et al. in order to suppress the formation and growth of a dendrite of lithium metal on the surface of said anode (abstract).

7. Claims 13, 16-17, & 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (WO 99/43034) in view of Yoon (WO 02/21632) and Rice (US2003/0096150).

With regard to claims 13 & 16-17, Chu et al. teaches a process for producing one or more anodes for a battery (page 1, lines 10-13), wherein the process for producing said anodes comprises: forming an anode precursor (page 3, lines 3-17) comprising a layer of intercalation material (page 3, lines 32-35 & page 4, lines 4-6) and then applying lithium metal particles to the surface of said anode precursor (page 3, line 8 & page 4, lines 7-8) by means of electrostatic transfer (page 6, lines 4-5), but fails to teach the specified type of lithium metal particles or the concept of fixing the lithium metal particles to the surface of the anode precursor by rolling, or the concept of forming said anode precursor on a separator.

Yoon teaches the concept of using stabilized lithium metal particles in an electrode (page 5, lines 1-16 & page 8, line 19 - page 9, line 4), and the concept of applying said stabilized lithium particles to the anode surface by rolling (page 5, lines 19-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of using stabilized lithium metal particles of Yoon to the anode of Chu et al. in order to suppress the formation and growth of a dendrite of lithium metal on the surface of said anode (abstract). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept

of fixing the lithium metal particles to the electrode surface by rolling of Yoon to the anode of Chu et al. in order to suppress the formation and growth of a dendrite of lithium metal on the surface of said anode (abstract).

Modified Chu et al. fails to teach the concept of forming said anode precursor on a separator.

Rice et al. teaches the concept of coating an anode material onto a separator (claim 31) thereby allowing a battery to comprise a plurality of anodes and cathodes.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of creating an anode on a separator of Rice et al. to the process of making the battery and anode of modified Chu et al. in order to allow the battery to comprise a plurality of anodes and cathodes.

8. Claims 3-4 & 7 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (WO 99/43034) and Yoon (WO 02/21632), as applied to claims 1 and 13 above, respectfully, and further in view of Gao et al. (US 2002/0119373).

With regard to claims 3-4, 7, & 15-16, modified Chu et al. fails to specifically state that the lithium metal particles can in the form of a slurry or suspension with carbon particles when dispersed over said anode precursor.

Gao et al. teaches that lithium metal particles can be in suspension form with a hydrocarbon solvent (thereby allowing said lithium metal particles to mix with carbon

particles) can be applied to an anode precursor (paragraph [0019]) in order to provide an improved distribution of lithium metal particles onto/into said anode precursor (paragraph [0019]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the concept of applying said lithium metal particles mixed with carbon particles to an anode precursor of Gao et al. to the battery of modified Chu et al. in order to provide an improved distribution of lithium metal particles onto/into said anode precursor (paragraph [0019]).

9. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al. (WO 99/43034) and Yoon (WO 02/21632), as applied to claim 1 above, and further in view of Yoshino et al. (US 6,884,270).

The disclosure of Chu et al. and Yoon as discussed above are fully incorporated herein.

With regard to claims 8-11, Chu et al. teaches the concept of making an anode precursor prior to applying a layer of lithium metal powder (page 5, lines 2-4 & page 6, lines 4-11).

Modified Chu et al. fails to teach the specified anode precursor composition, or the specified steps of producing said anode precursor.

Yoshino et al. teaches the process of making an anode precursor, wherein said anode precursor comprises an active material (carbon), a binder (polyvinylidene fluoride (PvdF)), and a solvent for the binder (N-methylpyrrolidone (NMP)) (col. 10, lines 45-65 & col. 7, line 52 – col. 8, lines 20), wherein said anode precursor is produced by the steps of: (1) mixing the active material, binder, and solvent together (col. 10, lines 45-49), (2) coating the mixture onto a thin copper foil (col. 10, lines 50-54), (3), drying the anode (col. 10, line 55), (4) calendaring / compression molding the anode (col. 10, lines 55-57), but fails to teach the concept of vacuum drying the anode after calendaring/compression molding.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the anode precursor composition of modified Chu et al. with the anode precursor composition of Yoshino et al. because the anode precursor material of Yoshino et al. is known to be an effective anode precursor material and one would have a reasonable expectation of success in doing so. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the process of making the anode precursor of modified Chu et al. with the process of making the anode precursor of Yoshino et al. in order to create a superior anode precursor.

While modified Yoshino et al. fails to teach the step of vacuum drying the anode after calendaring/compression molding, one of ordinary skill in the art would understand that it would be advantageous to vacuum dry the anode after calendaring/compression molding in order to remove any remaining solvent.

Conclusion

10. The prior art made of record and not relied upon which is considered pertinent to applicant's disclosure is as follows: Appleby et al. (US 2001/0026884) discloses that an electrode can be applied to an intermediate layer via spraying, calendaring, pressing, or electrostatic spraying; Delnick et al. (US 6,316,142) discloses that an electrode slurry can be coated on a substrate by electrostatic coating, dip coating, spray coating, roll coating, or screen printing; Nitta et al. (2003/0039891) discloses a method for obtaining a composite particle precursor and making the layer adhere onto a surface via electroplating, alloying, or other methods..

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Friday, 8:00AM - 4:30PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Cynthia H Kelly/
Supervisory Patent Examiner, Art Unit 1795